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# Analysis on Construction of Emergency Management Coordination for A Given State-level Economic and Technological Development Zone

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## Abstract

This paper briefly introduces the mutual progress of city emergency and informatization, discusses construction model of Emergency Response Platform for the combination of “Peacetime” and “Wartime”, states the construction of transaction system for “Prevention” and “Disposition” in Emergency Response Platform, and finally points out the orientation of development.

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Key words: State-level Economic and Technological Development Zone, Emergency Coordination.

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## 1. Foreword

From 1984, when China established the first National Economic and Technological Development Zone, to 2008, there were 54 State-Level Economic and Technological Development Zones (hereinafter referred to as national development zones). The state-level development zones have generated GDP 1013.69 billion RMB for the year 2006, 1269.596 billion RMB for 2007, and 1531.3 billion RMB for 2008.

State-level development zones have become the vanguard to promote domestic development, system reform, technological innovation, and circular economy. We all know that with the rapid development of science and technology, human ability to transform the nature is becoming more and more powerful, while at the same time, the counterforce of the nature also is strengthened, these problems must be resolved by rational attitude and advanced science.

City Emergent Public Event Management Platform is not only a tool for securing State-Level Economic and Technological Development Zone, but also a symbol for city modernization. It is an effective platform for the government to handle public emergency events. City governments need to transform their functions to better undertake social management and public service. For this, the integration and improvement of existing emergency

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response systems to establish an intelligent, cross-regional, cross-departmental, coordinated, rapid-response, and united management platform is needed.

However, the construction of the City Emergent Public Event Management Platform should not follow the same pattern. The actual local status should be considered about. The platform is supposed to meet not only the requirement of emergency response, but also daily work operation.

## 2. Combination of City Emergency Response and Informatization

Great Petrochemical is the main and flagship industry of a given national development zone. Also, it's an important petrochemical base in Guangdong and China. This zone is now developing port logistics industry and creating an important logistics center in South China. China's first nuclear power plant is close to the zone. However, there are hidden risks of emergent public events though its economics runs well. With the rapid economic and social development of the development zone as well as the functional conversion of the government from management-oriented to service-oriented, the city government's services are continuously expanding the content areas, with focus on improving service efficiency and quality of the government.

The stated national development zone made use of the opportunity of building the city emergency management platform to embed all informationalized applications into one platform, which was their integration strategy from the beginning. Indeed the biggest problem for city informatization is the isolation of systems and information. For example, the isolation of the emergency phone numbers 119, 110, 120, and 122. That results in the inefficiency of emergency rescue. The integration strategy of the stated national development has set a good example and made all systems share their information on the platform through authorization.

## 3. Combination of “Peacetime” and “Wartime” for the Platform

Content of Peacetime-Wartime-combination platform:

- (1) Platform application system: Display the whole function of emergency response software platform.
- (2) Platform management system: Optimized use of emergency response platform resources.

### 3.1. Application system of Peacetime-Wartime-combination platform

“Peacetime” means the mutual management of governments, social organizations, and citizens to prevent and defuse emergent public events before they happen. It consists of five sub-systems: organization management, hidden risk control management, target survey, education & training, and rescue assistance.

- (1) Organization management: Its management system consists of emergency committee, emergency office, and consultant experts.
- (2) Hidden risk control management: hidden risk means places and facilities that may cause factitious public events. As hidden risks are observable and controllable, they can be found and controlled by intensive work.
- (3) Target survey: Utilize city management information technology to survey and predict city emergent public events, then make pre-alarm.
- (4) Education & training: This is about the education and training of public crisis prevention knowledge.
- (5) Rescue assistance: the back-up system which consists of government financial department and public groups. It is responsible for making materials assurance scheme.

“Wartime” means the conversion from daily operation to emergency response and recovery after a public emergent event happens.

- (1) Establish a public crisis and emergency command platform. When there is an emergent public crisis, the managing organization of public emergencies automatically converted to emergency command centre. And experts give advice on treatment. The emergency command centre quickly organizes all parties to convert from the normal operation state into emergency response state.
- (2) Start up information release platform. Release authoritative public security information in time. Give the public effective guidance and psychological adjustment, guide the public to make self-help and self-defense, and minimize the loss.

- (3) Professional rescue teams to play a role. The Government should establish a well-trained professional team of emergency relief, and also attract private capital to construct city emergency rescue masses system. The aim is to establish a multi-party rescue system.
- (4) Rehabilitative measures to be reckoned with. Once the crisis is controlled or eliminated, the government, in addition to find the causes of the disaster, analyze the event and ascertain where the responsibility lies, an important task is to undertake reconstruction to refurbish the mess into normal status including people's emotion.

### 3.2. *Management system of Peacetime-Wartime-combination platform*

Hardware and software are indispensable for emergency response platform construction. How to make full use of those equipment in both peacetime and wartime is a question to be thought about.

The above-said national development zone has created its platform management scheme for peacetime and wartime with their understanding of emergency response operation.

The integration strategy is adopted from the first beginning of emergency response platform construction, with its range covering emergency call service, convenience service, and emergency response office. The construction of such platform aims to respond to emergent public events. Yet, it's impossible for the platform to face emergent public events every day. So the point is to utilize the platform to serve for daily operation in peacetime and convert to emergency response in wartime. With this the platform can be fully used, tested and maintained, thus more stable.

## 4. **Combination of “Prevention” and “Treatment” for the Platform**

Public emergent events refer to social stability, economic development, and other aspects of national security, especially for the development zones with petrochemical and nuclear power. Thus, a rapid, efficient and comprehensive pre-alarm system mode should be established. Through pre-alarm mechanism, probable fields of public emergent events can be surveyed and reported to the government for any abnormality. So the government can have a real-time surveillance and make complete estimation to possible public crisis, subsequently with a better preparation and solution.

### 4.1. *Hidden Risk Survey, Prevention and Control*

Integrate the video surveillance resources of enterprises and related government departments to survey and forecast hidden risks. Digital video surveillance is the core of the system, combining with other types of detectors such as temperature or humidity detectors, to achieve remote monitoring, pre-alarm and electronic investigation assistance of hidden risks.

- 1. Dynamic surveillance of protective targets, great potential risks, and key infrastructure, etc.
- 2. Get to know the spatial distribution and operation status of targets, with functions of data connection and report.
- 3. Realize hidden risks analysis and appraisal.
- 4. To hidden risks, there are functions such as on-line registration, automatic recognition, danger classification, risk control classification, and dynamic surveillance based on GIS platform, etc.
- 5. Bring technical safety parameters of enterprises into surveillance and realize automatic patrol, real-time survey, and automatic alarm report.

### 4.2. *Comprehensive Forecast, Pre-alarm, and Judgment.*

Based on forecast and pre-alarm of relevant government departments, the system makes comprehensive pre-alarm and post-disaster influence analysis of public emergent events. The aim is to forecast and make comprehensive judgment of the influence areas, influence way, duration, and extent of harm, etc.

- (1) Confirmation analysis, appraisal and alarm report of public emergent events.
- (2) Forecast the development tendency of public emergent events and recognize adverse trends to guard and control.

- (3) Make simulation analysis after a public emergent event happens, so that the system can simulate and predict the coming results of the event. Accordingly a relevant solution can be offered for decision-making.
- (4) Relevant event information can be searched and integrated.
- (5) Analogue simulation of events is available in the system.

#### 4.3. Intelligent Treatment Assistance

With reference to all data, the system provides with guidance flow and decision-making assistance to public emergent events.

- (1) Establish various decision-making support database like expert knowledge database, method database, analogue simulation database, and rescue information database, etc.
- (2) Build application interfaces that meet command operation requirements of all levels.
- (3) Build a platform which integrates with simulation, expert advice, comparison and analysis functions, in order to find the optimized solution.
- (4) Set up an expression system to deliver clear message that everyone can understand.
- (5) Give guidance flow and decision-making assistance to public emergent events
- (6) Digitalization of pre-plan.
- (7) Visualization of pre-plan.
- (8) Systematization of pre-plan.
- (9) Standardization of pre-plan.

### 5. Conclusion

Due to some defects of China emergency management system, accordingly there are some defects for the emergency management system of the national development zones. But after all, the construction of such system is beneficial and meaningful to the society.

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### References

- [1] Yaohaowei, Wangyouhai, Zhuxiangxin, Chenxiangyi. *Preliminary Research on China Public Security Emergency Management Mechanism. Excellent fruits Selections of Third-term China Public Emergent Event Protection and Prompt Resolution Conference*. 2009
- [2] Wangwenjun. *Research on Layout of Emergency Commanding and Social Comprehensive Services System for Medium and Small-sized Cities*. 2007(1).
- [3] Yangyiwen. *Rethinking of City Public Security Management*. 2006(7).
- [4] State Council of the People's Republic of China. *State Council's Suggestions on Strengthening Emergency Management Work in an All-round Way*. 2006